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EDITED BY WILLIAM HUNTING, F.R.C.V.S.

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THE EXTENSION OF VETERINARY PRACTICE.

Some recent correspondence in the public Press, a few extracts from which we have reprinted, may do good by calling popular attention to the evils of animal doctoring by unqualified men. But its beneficial effect will be very limited. Broadly speaking, the owners of animals responsible for the evil may be divided into two classes—those who do not choose to employ veterinary surgeons and and those who cannot afford to. Such correspondence as that published in *The Referee* may do something to educate the former class, but can, unfortunately, have little or no effect upon the latter. This class deserves separate consideration; for there are many owners of animals to whom veterinary fees are practically if not absolutely prohibitive. The result is that very many animals, even horses, never receive qualified veterinary attention throughout their lives. So long as that goes on it cannot be said that the veterinary profession is as useful to the community as it might be.

It is not easy to suggest a remedy. One obvious method—that some veterinary surgeons should deliberately lay themselves out to meet the needs of poor owners—could be practised in populous districts, but is open to grave objection. The sixpenny doctor and the club doctor have been recognised units in the medical profession for a long time. But the positions they hold are not enviable, and their utility is limited. They are hard worked and poorly paid; and one inevitable consequence of their overwork is that they are forced to give their too numerous patients the minimum of attention. On the whole, the attempts to supply medical attendance at the very cheapest rates have done little good to either doctors or patients; and there is no reason to think that they would work any better if introduced into veterinary practice.

How to bring the large amount of veterinary work at present done by unqualified men into the hands of the profession is well worthy of the most serious consideration. In the case of owners who can afford veterinary fees, the problem is simply how best to accelerate their enlightenment; for there is no doubt at all that the public is gradually awakening to the value of the trained veterinarian. The recent establishment of veterinary inspection at Scottish shows was one sign of this; the present correspondence in *The Referee* is another. Absolutely impecunious owners stand upon a different footing; and it is difficult at present to see what can be done for them in the mass. But they form the minority; the great majority of owners can well afford a moderate veterinary fee.

DEMODEX BOVIS.

By S. N. MITTER, G.V.C.BENG., Calcutta.

(From the Raymond Research Laboratory).

In the beginning of last September, an outbreak of a "peculiar kind of fever" among cattle was reported from certain swampy localities in Midnapore on the right bank of the River Rupnarayan, and I was directed to investigate the disease. I found the country to be inundated by the River Rupnarayan, which stopped all agricultural work. I detected within this area several cases of the malady in different stages.

The disease is characterised by the formation of nodules about the size of a large pea, and starts from the hump and neck and spreads all over the body, especially on the shoulders, legs and chest. These local symptoms are generally preceded by fever ranging from 102° F. to 103° F. for 2 or 3 days, While the nodules are forming the skin is inflamed and each spot is surrounded by a hæmorrhagic zone. After a time, which may vary from 3 to 6 days, the nodules become pustules, and a small quantity of thick pus oozes from a small orifice, but most of the matter remains within the abscess, this pus afterwards gives rise to permanent local thickenings. The hair over the pustules generally falls off, leaving a black patch. The disease is carried to the healthy by means of birds, especially crows, and flies. This view is also confirmed by the ryots.

On microscopical examination of material from one of the pustules a large number of demodex was noticed in different phases of development. The length of the mature female varied from 250 *u.* to 300 *u.* and breadth taken at widest part of cephalothorax from 50 *u.* to 60 *u.* The length of the male 210 *u.* to 230 *u.* and breadth from 45 *u.* to 50 m.

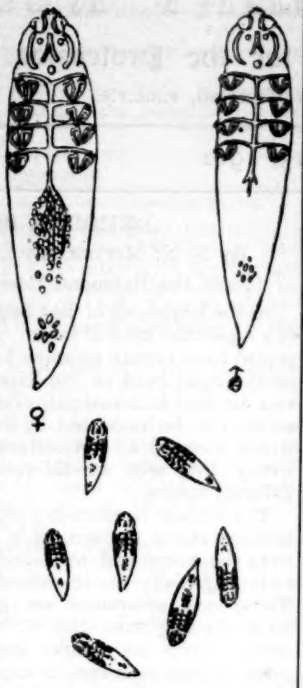
Nearly 75 per cent. of the zebu cattle were affected. Calves were more generally attacked than the adults. The disease was not fatal.

This disease is locally known as "Kat Basanta," or "dry small pox," from the symptoms it presents. "Basanta" is a name which is also given to the skin disease which occurs in Rinderpest. Demodex is reported to occur in the area about the same time every year.

The following extract, from Prof. Neumann's Treatise on Parasites, on the subject may be of interest.

"Demodex of the Ox (D. Folliculorum Var Bovis). The average length is 200 m. The rostrum and cephalo-thorax form about two-fifths of the total length. Eggs ovoid in shape. Causes a pustular affection in the ox."

"The demodex already noted by Gros (1845) in the muzzle of the horse, was found by W. Faxon in 1878 in the hides of cattle prepared for tanning, and sent from Illinois and Minnesota to Boston. More especially in the region of the neck and shoulders these skins showed numerous pustules formed by dilated hair follicles; they were filled with a soft whitish matter which escaped by pressure and was composed of fat globules and a multitude of the Demodex. After being tanned the skins exhibited small cavities, many of them extending through the substance of the hide."



From a fresh specimen. The lower figures are drawn with a Swift's microscope Ocll. obj. 2in. The upper two figures are 4-1/3 times enlarged from the lower ones

"A case of the disease was observed by Grim in a fifteen-months-old heifer, badly developed and in poor condition, notwithstanding good food. With the exception of the head and limbs, the skin elsewhere—especially at the shoulders—was studded with nodules the size of a pea. The surface of these small tumours was hairless and smooth, and when squeezed yielded a thick viscid pus containing an enormous quantity of the Demodex. The other animals in the herd were quite healthy in every respect."

THE PHONENDOSCOPE.

The object of this instrument is to render audible all sounds, whether natural or caused by morbid conditions of the animal body. They can be heard with much greater intensity and within much more narrow limits than has been possible with the ordinary stethoscope. At the same time it conveys with great accuracy the nature of the sound.

Next to the clinical thermometer the phonendoscope is the most useful instrument to the general practitioner. With a view to bring it into more general use, I will mention a few conditions where it can be applied with decided advantage to both surgeon and patient.

Beginning at the head, the nasal passages and various sinuses can be examined and obstructions located, such as polypus, thickening of the membranes, and pus. Passing to the throat and larynx, the moist, faint whispers from any abnormal condition can be heard, and the finger placed on the exact spot. The large blood vessels and semilunar valves can be examined at the front of the chest. In doing this the use of the sound-post gives best results; by its use one is more certain of locating with extreme accuracy the lesions that may be present.

The heart can be examined from the usual position. Consolidated portions and abnormal sounds of the lungs are easily and certainly located. To any one familiar with the positions of the large and small bowels, any sounds from these can be easily placed, and useful knowledge obtained as to which portion of the bowel is active and which dormant.

For ascertaining if an animal is pregnant the instrument can be used on the lower part of the abdomen in front of the mammary gland, or it can be introduced into the rectum or vagina when the rythm of the fœtal heart can be heard. For diagnosing the exact position of deep-seated fractures and locating those of a more superficial nature. Fractures of the pelvic bones may be discovered by unloading the rectum, and introducing the instrument, having an assistant to move the limbs at command. Abnormal sounds in joints may be made out easily, and assist often in diagnosing obscure lameness.

I have *not* had an opportunity of trying it on a case of navicular disease, but have no doubt that it would be of assistance. I think the friction sounds produced by contact of the diseased surfaces would be audible.

The instrument as supplied to the medical profession requires modifying to meet the demands of our work. This I have carried out, so that the instrument can be easily and conveniently used on any of our patients.

R. M. Malloch, M.R C.V.S., Inventor,
Designer, and maker of veterinary instruments.
Kirkby Stephen.

ABSTRACTS.

On the Occurrence of Two Species of Parasites in Equine "Piroplasmosis" or "Biliary Fever."

Nuttall and Strickland have recently published (*Parasitology*, Vol. V., No. 1, 1912) some important researches upon the parasites found in equine "piroplasmosis" or "biliary fever." Hitherto this disease has been regarded as due to a distinctive parasite, the *Piroplasma equi* Laveran. Laveran studied the organism in stained blood films sent to him from South Africa by Theiler, and his description and figures show that his *Piroplasma equi* does not possess the characteristic mode of multiplication and form of a true *Piroplasma*. Franca, in 1909, therefore placed Laveran's parasite in a new genus, which he named *Nuttalia*. Koch had previously pointed out, in 1905, that two types of parasites occur in equine piroplasmosis, and he believed that they might cause distinct diseases.

The present authors clearly show that two distinct species of parasite are found in "biliary fever," and that consequently two distinct diseases are included under the name.

Nuttall and Strickland have studied both parasites, not only in fixed and stained preparations, but also when living in the blood. By so doing, and continuously watching the changes of form which the living parasites undergo (and which have led them to attach comparatively little importance to the variety of forms seen after fixing and staining), they have arrived at the following definite conclusions. The essential difference between the two parasites lies in their methods of multiplication.

Piroplasma equi—or *P. caballi* as the authors call it—though its scarcity in the blood of infected animals renders its examination *in vivo* difficult, can yet be seen to multiply after the same manner as *P. bovis* or *P. canis*. That manner may be briefly described by saying that two buds of protoplasm appear from the single parasite, the chromatin protruding into these buds in a fork-like fashion, and that the buds or incipient daughter-cells continue to augment at the expense of the mother-cell till a stage is reached at which the two daughter-cells have assumed the form of perfect piroplasmata still joined together by their pointed ends. The chromatin masses in the daughter-cells separate, and finally the daughter-cells themselves separate, and escape from the corpuscle. The process, like that in *P. bovis*, is slower than in *P. canis* but otherwise is similar to the latter. Study of the stained parasites shows them to be very closely allied to *P. bovis*, the chromatin structures of the two organisms being identical.

The multiplication of *Nuttallia equi*, with regard to which the authors' conclusions support the previous ones of Franca, is somewhat more complex. It may be briefly summarised by saying that the parasite, at first round (most usually), oval, piriform, or irregular in shape, developes a stellate or "cross" form. This is the multiplication form, and, when complete, consists of usually four, but occasionally five or even six young pasasites, oval or piriform in shape, arranged cross-wise, and still attached to one another by their narrower ends. Finally they separate from each other and escape from the corpuscle, in which they may move about very actively before leaving it. The authors did not actually see the young parasites enter fresh corpuscles; but they are convinced that this takes place, as if does in the case of *Piroplasma*.

Nuttallia equi stains similarly to Piroplasma; and the division of its cytoplasm is preceded by definite nuclear changes.

As a rule, *N. equi* is not very abundant in the blood, but the number of infected corpuscles varies very greatly. In the authors' three experimental horses the maximum number of infected corpuscles observed was respectively 5·4 per cent., 0·9 per cent., and 13·2 per cent. The parasites appear in the blood at the onset of fever, and their number rises and falls with the body temperature.

Finally, the authors have experimentally proved in one instance that a horse which has been infected by and has recovered from piroplasmosis is still susceptible to infection from the *N. equi*. It is clear from their researches that the term biliary fever or piroplasmosis really includes two distinct diseases, preduced by two equally distinct parasites. They promise a general summary of our present knowledge of these two diseases—Nuttalliosis and piroplasmosis in horses in different parts of the world in a future paper. In the meantime they suggest that trypan-blue, which has already been found of value in treating bovine and canine piroplasmosis, might be of equal service in equine piroplasmosis; and they add the remark that the drug may be found to influence *N. equi* differently to *P. caballi*. A footnote contains the information, received while the article was in the press, that Bielitzer, in Russia, has recently successfully treated equine piroplasmosis by means of trypan-blue.

Piorkowski's Distemper Serum.

Jakob reports (*Münch, Tier. Woch.*) his experience with Piorkowski's anti-distemper serum. He attempted to immunise 20 dogs with the serum. Ten of these dogs sickened with typical distemper, two dogs doing so 14 days after the inoculation, two dogs 21 days, one 23 days, three 49 days, one 72 days, and one 83 days. In addition, two other dogs showed catarrhal affections of the laryngeal and intestinal mucous membranes, which could not be regarded as distemper with certainty. Of the ten dogs affected with typical distemper, five died.

Jakob also employed the serum in the treatment of three distemper patients. Two died and one re-recovered; but Jakob is inclined to attribute the single recovery to the action of medicinal agents which he employed in conjunction with the serum, —(*Berl. Tier. Woch.*)

Multiple Actinomycosis.

Prof. Schlegel, of Freiburg, reports (*Zeitschrift für Tiermedizin*) a case of multiple actinomycosis of the reticulum, omentum, liver, diaphragm, and right lung. The subject was a five-year-old ox, and the lesions originated from internal injury by a foreign body.

Reticulum, omentum, liver, and diaphragm showed injuries and cicatrisations. Multiple actinomycotic abscesses of considerable size existed around the injuries. A grey-red growth of granulation tissue the size of the fist, containing grey-yellow foul-smelling pus, was upon the omentum. The middle of the liver was occupied by an actinomycotic abscess the size of a man's fist, with numerous smaller yellowish-red actinomycomata, ranging from chestnut to apple in size, in its vicinity, so that a hard adhesion the thickness of the hand existed between the liver and diaphragm. The diaphragm was adherent to the right lung by means of a hard fibrous deposit the size of a plate, and several centimetres thick; and actinomycotic new tissue was growing deeply into the pulmonary tissue, especially into the intestines.

Numerous actinomyces, and also pyogenic organisms, could be demonstrated in the masses of new tissue and in the abscesses.—(*Berliner Tier. Woch.*)

W. R. C.

NORTH WALES VETERINARY SOCIETY.

A meeting was held at the British Hotel, Bangor, on March 26th at 3 p.m. The following members were present: Mr. O. Trevor Williams (President); Dr. Evans; Messrs. Owen Thomas, W. Hall Savage, C. W. Cartwright, Richard Jones, Hon. Treas.; L. W. Wynn-Lloyd, Hon. Sec. Visitor: Mr. E. Wallis Hoare.

The minutes of the last meeting were read and confirmed.

The SECRETARY read the circular letter from MR. A. Gofton, Secretary of the National Affiliation scheme. It was resolved to adhere to the scheme and become affiliated under the new rules.

Apologies for non-attendance were received from Messrs. R. S. Rowlands, J. H. Wynne, and A. W. Noel Pillers.

The HON. SEC. proposed, and the President seconded, a vote of condolence with Mr. J. Mathews on the death of his brother.

The PRESIDENT proposed, and the Hon. Treasurer seconded, a similar vote with the Hon. Sec. on the death of his mother.

Both resolutions were carried unanimously, the members standing.

A discussion ensued as to the disposal of surplus from the entertainment of the National at the Carnarvon meeting last July.

It was proposed by the Hon. Sec., and seconded by the Hon. Treasurer, that half be handed over to the Victoria Benevolent Fund and one-half to the International Veterinary Congress (1914) Fund. Carried.

THE TREATMENT OF WOUNDS.

By E. WALLIS HOARE, F.R.C.V.S.

Mr. President and Gentlemen,—In selecting the "Treatment of Wounds" as a theme for discussion I venture to think that it is one that may prove of interest to every practitioner; certainly there are many points in connection with it, which offer ample room for an interchange of opinions, ideas, and experiences, the result of which is likely to prove useful in our daily work.

I freely confess that one of my reasons in choosing this subject is to ascertain as far as possible to what extent the principles of aseptic surgery can be applied to animals.

I am quite aware that in certain quarters it is held that aseptic surgery *can* be applied to animals, and that failures in this direction are to be attributed to want of care on the part of the practitioner, or to prejudice. But in drawing conclusions on matters of this kind, it is essential to possess a varied experience of surgery under conditions favourable and unfavourable, both in town and country; and one important point that I shall endeavour to demonstrate will be with reference to the effects of environment and certain unalterable conditions that exist in connection with the treatment of wounds in our patients.

I have also another object in view: many medical men and several of the laity hold the erroneous opinion that we do not take the trouble to practise aseptic surgery; we are constantly asked why wounds do not heal by first intention, and why we do not adopt this or that measure which proves so successful in the case of wounds in man. For remember, that owing to the spread of popular medical knowledge the "man in the street" now professes to know something about surgical technique. Horse-owners, through reading various popular works on veterinary science, pretend to know all about antiseptics, and the suggestions that are often made to us when treating wounds are grotesque in the extreme. My remarks throughout this paper will be specially directed to demonstrate the fact that veterinary surgeons appreciate the importance of aseptic surgery, and endeavour to carry out its principles as far as circumstances will permit them to do so.

Let us first of all take a retrospective view of veterinary surgery as applied to the treatment of wounds. That marked progress has been made is a fact apparent to even the most pronounced pessimist. This advancement must be attributed to the discoveries of Lister, and although the researches of this eminent scientist were directed to the perfecting of human surgery, there is no doubt whatever that the application of his principles to veterinary surgery has been productive of results which, if they cannot be described as brilliant, are at any rate most striking and satisfactory. For although abdominal surgery and the surgery of the joints are, so far as the horse is concerned, in a state of infancy up to the present time, everyone will admit that canine surgery has advanced by leaps and bounds since the principles of Lister have been applied to it. And even in the case of the horse we can justly claim that marked advancement has occurred by attention to Listerian principles. Again, a knowledge of the principles of wound infection has enabled us to prevent the occurrence of those fatal sequelæ of wounds, such as septicæmia, pyæmia, malignant œdema, etc., which were so frequently met with in former days, following accidental and surgical wounds.

Two factors were instrumental in the erroneous treatment of wounds that existed in former days. One was the lack of knowledge concerning wound infection, nothing being known with reference to micro-organisms or their effects.

Another was the prevalent idea that heroic measures were essential to promote healing; hence the employment of "black oils" and similar concoctions, a sublime ignorance existing as to the deleterious effects of irritants on wounds, and as to the existence of natural means of recovery.

The researches of Lister may be said to have extended from 1865 to 1890, and it is recorded that even up to 1880 a number of eminent surgeons were incredulous as to the value of the antiseptic treatment. Hence it is not surprising to find that in Veterinary Surgery up to this period the Listerian principles were not universally adopted.

It may truthfully be said that as that antiseptic treatment progressed from stage to stage in human surgery, its value was recognised by Veterinary Surgeons and its principles gradually came to be adopted. The earlier forms of this treatment would no doubt be considered crude in the present day.

We read in *The Lancet* that in 1865-66, compound fractures were treated by the local application of carbolic acid; the antiseptic was freely applied to the interior of the wounds in order to destroy the air-borne germs which had the property of causing putrefaction, the opening in the integuments was then covered with lint charged with carbolic acid, and protected by an external layer of thin sheet metal. "In opening abscesses, a piece of rag from 4 to 6 inches square was dipped into a solution of one part of crystallised carbolic acid and 4 parts of boiled linseed oil, and then laid upon the skin where the incision was to be made. One edge of this rag being raised, the part was incised with a knife previously dipped in the oil, and the rag was instantly dropped upon the skin as an antiseptic curtain, beneath which the pus flowed out." "For the subsequent dressings a kind of putty was made by mixing common whiting with the carbolised oil, and this, spread into a layer about 6 inches square, was laid over the incision."

From this simple and crude beginning evolved those principles which were ultimately destined to revolu-

tionise surgery, and render the discoverer the greatest benefactor to mankind that ever existed.

In 1867, carbolised shellac plaster was substituted for the putty and found more convenient, and during the same period ligatures of silk or catgut were introduced, the latter however did not assume their final form until 1881. Even with the above primitive antiseptic measures a marked improvement resulted in surgical work, and Lister recorded that Hospital gangrene, Pyæmia and Erysipelas disappeared from his wards.

In 1869 the carbolic spray was introduced by Lister. He still continued his researches, even in the face of opposition, and recorded in 1870 that for 9 months in the Edinburgh Royal Infirmary he had not met with any cases of Pyæmia or Hospital Gangrene in his wards.

In 1875 gauze charged with carbolised resin took the place of the shellac plaster, and various methods of employing carbolised oil and drainage tubes were described in articles written by Lister for *The Lancet*. In these articles were also discussed the sterilisation and use of sponges, and experimental proof was adduced that "the septic ferments were solid particles and not some kind of material in solution." The use of boric acid as an antiseptic was also described.

In 1879 improved methods of protective dressings were introduced, so as to prevent the carbolic acid in the external dressings from reaching the wound, once the latter had been rendered aseptic by the primary application of the antiseptic. This protective dressing was composed of oiled silk coated on both sides with specially thick copal varnish and afterwards covered with a layer of dextrin, so as to ensure its being moistened when dipped into a watery solution of carbolic acid. In cases where patients showed special idiosyncrasies to the employment of carbolic acid, either salicylic jute or gauze charged with a mixture of one part of oil of Eucalyptus and three parts each of gum dammar and paraffin, were employed.

In 1881 Lister delivered two addresses containing what seemed to be his first published reference to pathogenic bacteria as a distinct class of micro-organisms; and in 1883 he demonstrated the success of wiring of the patella, when antiseptic principles were employed.

In 1884 he drew attention to the uses of corrosive sublimate as a surgical dressing, and in 1889 he pointed out that Sal. alembroth was untrustworthy as an antiseptic, and in the sume year he introduced the double cyanide of mercury and zinc as a reliable agent to render gauze antiseptic, but pointed out that its germicidal efficacy, or ability to destroy existing bacteria, was inferior to its power of inhibiting bacterial growth, hence it was advised that the dressing should be moistened with a 5 per cent. solution of carbolic acid before being applied.

In 1890 Lister announced that he had abandoned the use of the carbolic spray three years previously, and that he had substituted solution of Corrosive sublimate for carbolic acid, having found the former less irritating and more efficient; he also pointed ont that the double cyanide of mercury and zinc could be prepared in a perfectly definite manner, and although the new product contained twice as great a percentage of cyanide of mercury as was present in the substance originally used, it had no tendency to cause irritation.

In 1907 we find what may be regarded as the final utterance of Lister, in a note occurring in Sir Hector Cameron's book "On the evolution of wound treatment during the last forty years." In this note "he advocated the use of the double cyanide of mercury and zinc, he preferred the use of sponges for the absorption of blood or other discharges from an operation wound to any of the substitutes that were proposed, while for the purification and sterilisation of such sponges, with an especial view to the destruction of both the sporeless micrococci and the spore-bearing tubercle bacillus, he preferred carbolic acid (1 in 20) to any other germicide. For purifying instruments, the hands of the operator and the skin of the patient, he used a similar solution, except in the case of the eyelids, when a solution of corrosive sublimate being less irritating, was preferable."

In circumstances where it was impossible to exclude septic agencies, such as in operations upon the mouth, etc., or in putrid sinuses or in certain compound fractures, Iodoform might be dusted on the cut surface of a wound, "after mopping with a solution of 40 grains of chloride of zinc in one ounce of water." The usefulness of iodoform was, however, rather limited. In the external dressing, gauze impregnated with the double cyanide of mercury and zinc was advised, and before being applied to the wound this gauze must be rendered damp with a solution of carbolic acid. To parts where there was very little space between the wound and some source of septic contamination, the double cyanide powder mixed with sufficient of the 1 in 20 carbolic solution to form a cream, might be applied with a camel's-hair brush. In some circumstances the cyanide powder might possibly be used as a first aid dressing by by dusting it over wounds by means of a tin with a perforated top.

As regards the changing of dressings, when there was a free discharge from a wound he preferred, as a rule, to remove the first dressing after a lapse of 24 hours, but a longer interval ought to be allowed after certain amputations.

The above abridged history of the evolution of antiseptic surgery is taken from the biography of the late Lord Lister that appeared in *The Lancet*.

During the course of Lister's career he had to submit to severe and often unjust criticism, but this is the fate of all those who attempt to leave the beaten track. One of his opponents pointed out in 1867 that Lister was not the first surgeon to use Carbolic acid, but this was already admitted. It is also recorded that Sir Wm. Savory (who was President of the Royal College of Surgeons for five years in succession, and full surgeon at St. Bartholomew's Hospital from 1867 to 1891) at the meeting of the British Medical Association held at Cork in 1879, delivered the address in Surgery, and spoke in attack or ridicule of the system of antiseptic surgery. I introduce this matter in order to show that surprise should not be expressed if examples of similar opposition existed amongst veterinary surgeons; that such did exist I have no doubt, but in the present-day there are few practitioners who deny the benefits of Listerian principles.

In order to comprehend the principles of the modern treatment of wounds, and to compare the *Antiseptic* methods with those designated as *Aseptic*, it is necessary to briefly consider the significance of certain terms that are employed in connection with the subject. Unfortunately it happens that the same term is occasionally applied in more senses than one, or has a different meaning attached to it by various authors.

The term "Septic" was formerly applied to wounds of an offensive character, which were frequently associated with Septicæmia, pyæmia, etc. But, as in the present day it is recognised that the conditions may arise from the action of pus-producing organisms, the term septic is generally applied to all suppurating wounds.

Recognising, however, that wounds may be offensive and distinctly unhealthy without any evidences of the presence of pus, it is clear that the term septic can be applied to conditions depending on a variety of micro-organisms. In many cases the septic condition of a wound depends on one pathogenic organism, but in almost every instance ordinary pyogenic organisms are present associated with those characteristic of sepsis.

In practice, we are generally inclined to apply the term Septic to *a putrid condition of a wound associated or not with the presence of pus.* As a very large number of accidental wounds in the horse heal by "granulation," but not under aseptic conditions, suppuration to a varying extent is common; still the pus is not offensive, the wound tends to heal with ordinary care, and we do not apply the term Septic to it, although certainly it could not be described as aseptic. A large number of accidental wounds in horses are already infected before the practitioner gets the chance of treating them.

ASEPTIC signifies the absence of sepsis, that is the absence of micro-organisms of any kind, and the term is synonymous with *sterile* or *germ-free.*

ANTISEPTIC is a term that is often loosely applied; literally it signifies anything opposed to sepsis; in a bacteriological sense it indicates an agent that retards or prevents the development of bacteria, irrespective of its power of *destroying* their vitality. But it is often erroneously applied as synonymous with *germicide*, whereas a large number of agents classed as antiseptics *are not capable* of destroying pathogenic bacteria.

DISINFECTANT is a term applied to an agent capable of *destroying* infective micro-organisms, and so far as pathogenic bacteria are concerned it is synonymous with Germicide. So that all disinfectants are antiseptics, but all antiseptics are not disinfectants.

DEODORANTS simply indicate substances that are capable of destroying or removing offensive or unpleasant odours, but it does not follow that they possess disinfecting properties. Many disinfectants however, are deodorants.

ASEPTIC AND ANTISEPTIC SURGERY.

To such an extent has the subject been debated that two so-called "schools" have resulted, and even these are not in agreement as to the precise sense in which the term *Aseptic* should be employed. There is in fact a decided antagonism between these "schools" as to the technique which is best calculated to bring about successful results, for be it remembered that both aim at the prevention of infection in wounds, and thus endeavour to promote healing in the shortest time possible. Briefly speaking, *the Aseptic system aims at preventing the access of pathogenic bacteria to wounds*, it embraces all the measures adopted to keep the wound aseptic, or free from the ill-effects of septic organisms, throughout its entire course, Antiseptic agents, except for sterilising the patient's skin, the hands of the surgeon, or in the process of sterilising ligatures, are rigidly excluded, and not permitted to come into contact with operation wounds; while all the materials used, such as ligatures, sutures and dressings contain no antiseptic, but are simply sterilised. The instruments are sterilised by boiling and are not placed in an antiseptic solution. Of course, the Aseptic method can only be applied to operation wounds made through unbroken skin into non-infected tissues.

The disciples of the Aseptic school, term the methods in which antiseptics are employed, either in solutions or dressings, as *antiseptic* methods. Some even go further than this, for we find one surgeon, Mr. Burghard, stating that the term "antiseptic" when applied to the treat ment of wounds should be reserved for those measures designed to combat sepsis already present in a wound.

The *Antiseptic School* claim that their methods are also aseptic, although as a means of precaution they employ antiseptics in addition to the means for securing asepsis. Sir Watson Cheyne, who is one of the advocates for this method, states—"Aseptic surgery is the method of treatment directed to the maintenance of an aseptic condition in the tissues of the wound presumably existing at the time of operation . . . . But on the other hand, antiseptic surgery has to deal with tissues which have already been infected, with or without a breach of the surface, and here the surgeon's efforts are directed to diminishing the effects of already existing sepsis, or, it may be in a few cases, even to eradicating it."

Mr. Lockwood, who steers a middle course, says in his work on Aseptic Surgery, "any method of wound treatment which aims at sterility will be called aseptic."

The bone of contention between these two systems would appear to be the question of the employment of Antiseptics; those of the Aseptic school holding that these agents by causing irritation interfere with the normal powers of resistance of the tissues, and thus retard healing. This weakening of the resisting power of the tissues may even enable micro-organisms to enter and take effect, in cases where surgical cleanliness was neglected although Antiseptics were employed.

Sir Watson Cheyne, however, points out in the "Bradshaw Lecture on the Treatment of Wounds" (1908), that the Listerian principles in wound treatment include two important postulates, (1) "the exclusion of bacteria, especially of pathogenic organisms, as far as possible during and after an operation. (2) Avoidance of irritation of the surface of a wound, so as not to interfere with healing nor with the power of the tissues in preventing the growth of any bacteria which have entered."

This authority clearly explains that, by the Listerian system, every precaution is taken to prevent irritation from the antiseptics employed, and also states that even with adherence to the strict principles of the so-called aseptic system, suppuration has occurred when operations were carried out in regions other than the peritoneum. He believes "that of late many surgeons have gone to extremes in the avoidance of antiseptic solutions," and that the aseptic system, so-called, is "*only carrying to an extreme the principle of avoiding irritation of wounds.*" He also shows that even the application of plain boiled water to the surface of a wound interferes with the integrity of leucocytes and other cells, for under the microscope they are found to rapidly swell up and become completely disintegrated. In summing up his criticism he states that "the pendulum has swung too far in the direction of the avoidance of antiseptics, and that the reasonable use of all the means at our disposal for securing asepticity of wounds will furnish more constant results." He also says "the chief point to which I take exception is the employment of dressings which do not contain an antiseptic in sufficient amount to render the discharges which flow through them unsuitable for the growth of bacteria." (In a dressing not containing an antiseptic, although sterile, when it becomes soaked with discharge, the latter may remain sterile until it comes near the surface of the dressing, then bacteria will grow in it, and rapidly spread through it and reach the wound, unless the blood has in the meantime become so concentrated by drying that it is no longer a suitable cultivating medium).

A second point is the absence of antiseptic solutions during the operation, in which hands, instruments, etc., may be washed from time to time to ensure continued asepsis. . . . . "The attempt to treat wounds without any antiseptic is a very unnecessary complication. In the first place it is ever so much more difficult to secure asepticity of a wound under such circumstances than if one takes advantage of antiseptics; and in the second place it requires a man who is especially skilled in bacteriological work to bear in mind the various loopholes which have to be guarded against in order to obtain a constant aseptic result. . . . . " I confess that I can see no reason for this great dread of a drop of antiseptic material getting into a wound; I can only say that my own results and those of surgeons who use antiseptics judiciously are in every way as good as those obtained with the more elaborate aseptic precautions, in fact seeing that we are not troubled with sepsis or "stitch abscess" at all, I venture to assert that they are better, because they are more constant and dependable."

Rose and Carless ("Manual of Surgery") in contrast-

ing Aseptic and Antiseptic Surgery, state "It is only natural that we who have had the privilege of working with Lord Lister and have seen the excellent results following the intelligent use of antiseptics, should still cling to that line of practice which certainly can be carried out with more precision under all circumstances, both in private and Hospital, than the other plan, the objects of which may at any moment be defeated by some slight inadvertence or oversight. The theory of Asepsis is no doubt perfect, but its practical application is often difficult owing to the necessity of having sterilisers always at hand, a matter almost impossible in cases of emergency in private practice."

I have deemed it advisable to quote the opinions of these several eminent Surgeons on the subject of Aseptic and Antiseptic Surgery before proceeding to consider how far the principles can be applied in Veterinary Surgery. I shall endeavour to show that, although in the case of the dog it is possible to carry out perfect Aseptic principles under proper surroundings, it is a far different matter when we come to deal with Equine Surgery.

I suppose it will be generally admitted that in the treatment of wounds in horses there are certain important indications to be fulfilled.

(1) Measures should be adopted which are likely to ensure the healing of wounds in as short a time as possible, so that the animal can return to work.

(2) Steps should be taken to prevent serious complications such as Septicæmia, Pyæmia, Malignant Œdema, Erysipelas, Bacillary Necrosis, Tetanus, etc.

(3) Measures for the prevention of permanent blemishes are of importance, and in the case of wounds affecting the limbs, every effort should be made to avoid the occurrence of conditions likely to interfere with the working powers of the animal.

Veterinary and Human Surgery Compared.

Here it will be necessary to compare human Surgery and Veterinary Surgery as regards the treatment of wounds, both accidental and as the result of operations. The distinguishing features that stand out pre-eminently are the following: The human surgeon has the advantage of a well-equipped hospital with all modern conveniences, and a staff of trained nurses to carry out his instructions. He is supplied with every detail calculated to ensure surgical cleanliness, and to exert a favourable influence on the course of wounds. Moreover, in operation wounds Aseptic principles are carried out from start to finish by trained hands, and the patients contribute to favourable results by obeying the instructions of the Surgeon. By complete rest the healing of wounds is facilitated, and means can be adopted by which the affected part is rendered as free from movement as possible. In the case of accidental wounds, early treatment is carried out before Sepsis has had time to exert its effects, even though micro-organisms have gained an entrance.

The Veterinary Surgeon, on the other hand, has the most adverse circumstances to contend with in his endeavours to render wounds, whether surgical or accidental, aseptic, and to keep them in this condition. Even in the best equipped Veterinary Infirmaries, so far as horses are concerned, it is extremely difficult to carry out Aseptic Surgery. No doubt by the use of iodine it is now possible to sterilise the skin, but there are other points to be considered.

Given an operating table, and a trained staff of assistants, so that the operator is only concerned with the operation, also that the operator or his assistants will carry out the subsequent dressings of the wound, then, indeed, Aseptic Surgery and healing by first intention are possible, provided that the technique is carried out so that the entry of micro-organisms into the wound is prevented.

But in ordinary practice a very different state of affairs exists; the patient is cast on a bed of straw, skilled assistants are not at hand, so that the operator has to attend to the casting, securing, etc., of the animal, by which means his hands become contaminated, and even the best directed attempts at asepsis are likely to be frustrated by the clumsy actions of the assistants. Again, unless the Practitioner is able to carry out the after treatment of the case, his primary endeavours will fail, as contamination of the wound is certain to occur.

With reference to accidental wounds, it is quite apparent that they become infected prior to professional assistance being sought. Contamination occurs at the time the injury is inflicted, and also from the treatment adopted by the owner or the attendant.

Consider also the surroundings in which horses are placed; even with the most scrupulous care and attention, it is impossible to render the best planned stall free from micro-organisms, and every act of the attendant seems calculated to secure infection of the wound. As for the average stable, both in town and country, and the crude methods of treatment adopted by the owners of animals, the wonder is that serious or fatal sequelæ do not occur far more frequently than is the case. For not only is the stall a veritable breeding ground for micro-organisms, but also, everything brought into contact with the wound is teeming with germs. Hands begrimed with dirt, filthy sponges, dirty stable buckets, soiled bandages, etc., are much in evidence, even the water for performing the perfunctory cleansing of the wound is anything but pure. How then do wounds heal under such circumstances? I think you will agree that the explanation is to be found in the natural powers of resistance possessed by the horse. If this vital resistance to the action of micro-organisms did not exist, we should meet with far more cases of Septicæmia, Pyæmia, etc., than we do at present.

No doubt of late years it is not unusual to find disinfectants in the hands of many owners of animals, and these agents are applied in concentrated solutions to wounds, with a total disregard for ordinary cleanliness. The result is that instead of promoting healing they retard it, as they exert a caustic and irritant action on the tissues; besides, the deeper portions of the wounds are not cleansed, and abound in micro-organisms.

A similar error is committed with reference to the disinfection of stable floors, the dirty surface is allowed to remain while disinfectants are scattered thereon.

Then while wounds are being dressed, it is not uncommon to find the dressings laid on the stable floor for convenience, and exposed to contamination from several sources.

Measures that can be adopted.

In order to fully grasp the importance of attention to surgical cleanliness in the treatment of wounds, it will be necessary to consider the *micro-organisms of wounds*, the *modes of infection*, and the means by which these can be overcome.

Micro-organisms. The most important are the Pyogenic cocci; these include Staphylococci and Streptococci.

Staphylococcus Pyogenes Aureus is found in acute abscesses and is responsible for the majority of suppurative inflammation, it is occasionally present in general pyæmia, and is often associated with other pyogenic organisms in suppurative processes. It is very resistant to many antiseptics, but is readily destroyed by solutions of the more powerful germicides; it is very widely distributed, and is found abundantly in the superficial layers of the skin and frequentiy beneath the finger nails in man. Experiments have demonstrated its power of producing suppuration, both locally

and internally, and it has been shown that if the vitality of the parts experimented on has been previously lowered, or the tissues damaged by chemical or mechanical means, infection occurred more certainly and readily.

Staphylococcus Pyogenes Albus is far less virulent in its action than S. Aureus.

Staphylococcus Pyogenes Citreus is only found in abscesses.

Streptococcus pyogenes is another very important organism. It is the causal agent in spreading Cellular inflammation, and of Pyæmia and Septicæmia in many instances; also of Septic metritis and Ulcerative endocarditis. One of its peculiarities is its tendency to invade the lymphatics and to induce lymphangitis and cellulitis; another is the capability of producing acute suppuration, sloughing of the tissues and inflammatory wound gangrene. Probably there are many varieties of Streptococci whose characters resemble each other so closely that it has not been possible to isolate them. Thus the *S. erysipelatis*, the causal agent of erysipelas resembles so closely both in appearance and cultural characters the *S. Pyogenes* that many authorities regard them as identical. The effects produced, however, are rather distinctive, and the *S. erysipelatis* must be regarded as an organism of serious importance in connection with the treatment of wounds.

The powers of resistance of the Streptococcus must be regarded as feeble when compared with those of the Staphylococci.

The Bacilli which are of importance in connection with wound infection, are, the Tetanus Bacillus, the Bacillus of Necrosis, the Bacillus of Malignant Oedema, and the Bacillus Coli Communis. Occasionally the Bacillus Tuberculosis, and the Bacillus Pyocyaneus, may infect wounds. Amongst other causal agents in wound infection we may mention the Botryomyces and the Actinomyces, also the Streptococcus of strangles.

It is apparent that the most important part of our duties in connection with the treatment of wounds is to prevent the entrance of these microbes as far as is possible, or, failing in this, to destroy their vitality or retard or prevent their development.

Modes of Infection:—By Air: Aerial infection was recognised even in pre-scientific periods. The Listerian principles and the carbolic spray were directed against this mode of infection, and the air was regarded as containing the germs of putrefaction, which were capable of setting up septic processes in wounds and their secretions. This view has been considerably modified in the present day. Experiments have demonstrated that the greater number of bacteria present in the air are non-pathogenic, that germs exist in the atmosphere only in the form of dry dust, that air perfectly freed from dust is harmless to wounds, and, when the air is kept still, wound infection rarely takes place through the atmosphere. But practically, we must admit the possibility of infection by air containing dust when we consider the surroundings of horses, the dust raised from a straw bed and during the process of cleaning the stall. Indeed some observers state that they have found cocci closely related to the pyogenic varieties and some actually belonging to that class, in atmosphere dust, especially where the air is moist.

Infection by water occurs unless this fluid is sterilised by boiling or a germicide added thereto. Ordinary water contains a large number of bacteria.

Other modes of infection include, infection from the skin of the patient, from the hands of the surgeon or those of his assistants, from instruments, sponges or their substitutes, ligatures and sutures, dressing materials, vessels or utensils, syringes, etc,

Circumstances Predisposing to Infection.

We may mention, excessive injury to the tissues during an operation, such as rough manipulation, bruising or tearing of the structures; by such means their vitality is lowered and their resistance is impaired so that the development of micro-organisms which may have gained entrance is thereby favoured. The number and virulence of the infecting organisms, the state of the health of the animal, and the environment, are also important in connection with this subject.

The Repair of wounds. Time will not permit me to enter into this question. As you are well aware, the mode of healing by Primary union or "union by first intention" takes place in simple incised wounds under favourable conditions, *i.e.*, when there is a practical freedom from infection, when hæmorrhage has been arrested, and the surfaces are brought into apposition, and kept at rest. It is the mode of healing we all strive to bring about, but so seldom succeed in attaining—so far as the horse is concerned.

Union by Granulation and Cicatrisation is by far the more common method of healing in horses. Formerly there was an idea that the suppuration accompanying the process originated from the superficial layer of cells on the recent granulations, which were arrested in their development and converted into pus cells, being cast off in the discharge. We know now that the cause of the suppuration is the presence of micro-organisms, and that union by granulation can occur without suppuration, although that is not common in the horse.

Union under a scab. Repair takes place beneath a scab formed by a drying of the discharges. The scab is cast off spontaneously as soon as cicatrisation is completed underneath. It is a common mode of repair in wounds left to heal without any dressing.

Operation Wounds.

We now arrive at the practical application of the principles, based on a consideration of the points we have considered. Dealing first with operation wounds, in the case of healthy tissues in the normal animal, there are certain details which, if they do not result in bringing about healing by first intention, will at any rate assist in the process of repair, and prevent the occurrence of serious sequelæ.

I suppose everyone will agree that instruments are best sterilised by boiling for five minutes in water containing a teaspoonful of carbonate of soda to each pint. The addition of the soda raises the boiling point of water to 104° C, and besides, it prevents the formation of rust if the instruments are left in the solution for some time; when required for use they are placed in a sterilised tray containing a solution of carbolic acid 1 in 40. The water should be boiling before the instruments are placed therein, and the vessel in which they are boiled should have a closely fitting lid so that the water will boil at a uniform temperature. Some practitioners assert that instruments can be sterilised by placing them in a 5 per cent. solution of carbolic acid. But experiments have shown that instruments, even if left in this solution for hours, are not sterilised with any certainty. As regards sharp instruments, such as knives, scissors, and needles, which become blunt from the effects of boiling, some surgeons advise that the edges be protected with a piece of gauze or lint and state that blunting does not then occur. This is not my experience, and I prefer to immerse such instruments in undiluted carbolic acid for a time, and then place them in a 1 in 20 carbolic solution. This method is advised by Sir Watson Cheyne, and it is also valuable in case an instrument happens to fall on the ground during an operation and is immediately required, as

boiling takes five minutes to sterilise. Indeed this method is also useful in emergency operations, when facilities for boiling are not at hand, or an instrument is required for use at a moment's notice. Corrosive sublimate has a most destructive effect on metallic instruments, hence solutions of this agent are unsuitable for sterilisation purposes.

As regards the preparation of the patient's skin and the hands of the surgeon; it is not feasible to carry out that tedious technique of sterilisation adopted by human surgeons. Fortunately we have in Tincture of iodine an agent which renders the skin of the patient and the hands of the operator aseptic. Of course the operation area should first be shaved before the iodine is applied. Two applications are necessary, viz., one about 15 minutes prior to operation and the other immediately before operation. The employment of Iodine for this purpose is not recent; the agent has been used in various ways in surgery as long ago as 1880. Dr. Antonio Grossich in 1907 published his experiences of iodine in surgery; and since then the agent has been widely employed all over the world. The skin should not be washed before the iodine is applied.

Simple incised wounds are those which are most likely to heal by first intention, provided certain details receive attention.

Deeper wounds generally heal by granulation, but unfortunately in too many instances suppuration occurs in spite of all precaution. But there are degrees of infection depending on the number, character, and virulence of the infecting micro-organs that gain entrance to the wound; hence the necessity for surgical cleanliness and the judicious employment of antiseptics.

There are *two* important points in connection with the subject which cannot be ignored. The *first* is, that in *operations of all kinds the tissues should receive as little damage as possible.* Neatness and dexterity in operating exert a marked influence on the healing of the resulting wounds. This is well exemplified in the operation of neurectomy, a skilful operator exposes the nerve and excises the desired portion with little or no damage to the surrounding tissues. On the other hand an inexpert operator, in his efforts to expose the nerve, disorganizes the tissues to a considerable extent. In the former case the wound heals by first intention, in the latter, even with all attempts at asepsis and antisepsis, healing occurs by granulation, often accompanied by suppuration.

Drainage is the next point. Now in all wounds of any extent, an exudation of serum occurs, this is generally referred to as the "secretions of the wound." Such must not be allowed to accumulate in spaces in the wound, and proper drainage is necessary. Accumulations of serum not only cause tension in the wound, but also favour the growth of micro-organisms.

The various details in connection with aseptic wounds need not occupy us further; for the reasons already given it is very difficult to obtain healing by first intention in the case of horses; that it is possible even in the major operations has been demonstrated by operators who have had special opportunities for carrying out the technique. But I have yet to learn that aseptic surgery as conducted by human surgeons, can be carried out in the ordinary operations by the general practitioner. Take even the latest surgical feat—the new operation for "roaring," where aseptic precautions are rigidly carried out before and during the operation, and what is the result? Certainly not healing by first intention in any instance, and more often than otherwise the wound is septic, and frequently fœtid. Such a condition would be regarded as anything but creditable in human laryngeal surgery—but then the circumstances are different.

There are some enthusiasts who give details of aseptic methods of castration; needless to remark they do not operate on many colts, and have very little idea of the conditions and environment of these animals in the country. My experience, in the attempt I made at aseptic castration carried out by means of ligature, was that no suppuration or swelling occurred but the animal died of septicæmia and septic peritonitis: had suppuration and swelling occurred probably the case would not have succumbed. At the same time I believe in all possible attention to surgical cleanliness and to antisepsis during the operation of castration, although I know full well that these measures will be frustrated in their results by the owner or attendant of the animal. How infection occurs in castration wounds is so obvious that I need not refer to the subject. When operation wounds suppurate or become septic they are in the same category as accidental wounds so far as treatment is concerned.

Every accidental wound may be assumed to be infected, to a greater or less extent.

In carrying out treatment, there are certain important procedures necessary, which I shall refer to under the following heads:

(1) *The arrest of Hæmorrhage if present*: this constitutes a subject in itself.

(2) *The cleansing and disinfecting of the wound.* This is carried out by careful washing out with an antiseptic solution. As to the agent selected, it is largely a question of choice. The large number of reliable germicides that are now on the market render a selection comparatively easy. Carbolic acid is still largely employed for the purpose, although there is considerable difference of opinion as regards its germicidal power. Whatever agent is used, a thorough cleansing of the wound is essential. Unfortunately we do not often get the chance of first dressing a wound, as the owner or attendant attempts the process on the occurrence of the accident, and far too frequently introduces infection. In the case of a deep punctured wound, in which infection is probably deep-seated and the external opening small in size, it is necessary to carefully enlarge the latter so as to carry out thorough irrigation.

(3) *The removal of foreign bodies.* This is a procedure that requires special attention. Wounds in hunters frequently contain foreign bodies such as thorns, portions of gravel, etc., and a careful search is necessary in order to discover their presence; if they are overlooked serious trouble will occur afterwards.

(4) *Drainage.*—Efficient drainage is of the greatest importance. This is well exemplified in the progress made in punctured wounds extending in an upward direction, and in those extending downwards. Without proper drainage all other means will fail. To carry this out efficiently in the case of extensive wounds is not always an easy matter, but on it depends success or failure. Suitable openings must be made at dependent parts, and the selection of drainage materials will depend on circumstances. If gauze drainage be employed, care should be taken that the gauze does not act as a plug and prevent the escape of discharge. In extensive wounds india-rubber drainage tubes are to be preferred. The old-fashioned Seton must be condemned—it causes irritation and increases suppuration.

(5) *Sutures.*—Careful consideration is necessary in order to decide as to the advisability of employing sutures or otherwise. The frequency with which extensive wounds involving the muscular tissues (such as occur in the region of the hip) suppurate, and the sutures give way, has led some practitioners to leave such wounds open. No doubt in the case of a "squealing" kicking mare, or of an unbroken colt, we all have a tendency at times to avoid the use of sutures, and it is surprising to find how readily such wounds heal. Still there is no doubt that less blemish is left if the edges of such wounds are brought together by sutures, at any rate for a time, provided thorough cleansing is carried out and proper drainage is provided. In extensive wounds of this kind occurring in vicious animals, I always cast

them in order to carry out the procedure properly. The suture material should be soft in texture, but strong; hard material is very likely to cut through the skin. In clean-cut wounds sutures should always be employed. It is hardly necessary to remark that in punctured wounds, or deep wounds of any kind, and in the case of torn or lacerated wounds with much destruction of tissue, or in suppurating or septic wounds, sutures are contra-indicated.

Experience has taught me that wounds in the region of the head are best treated without sutures, unless such cases are in an Infirmary under the immediate care of the practitioner, so that the early indications of septic infection may be observed. Under other conditions there is a tendency to the occurrence of Erysipelas or allied complications. I now paint such wounds with tincture of iodine and find the best results therefrom. This may be considered as an irritating agent, but the results justify its employment. There are instances of suppurating wounds in which suturing should be attempted in order to avoid permanent blemish. Some time ago I saw a case in a foal in which a wound extended from the commissure of the lips up the cheek, exposing the first two molar teeth. The accident occurred about 10 days previously, and two attempts at suturing had been made, but they were unsuccessful. The wound was suppurating freely and granulations had formed on each of the edges, but there were no evidences of union. My first attempt was also unsuccessful. I then cast the animal again, removed all granulations with a sharp scissors, freshened the edges of the skin and mucous membrane, removed all debris of food, washed the parts thoroughly with peroxide of hydrogen, inserted a deep layer of sutures so as to bring the edges of the mucous membrane together, the sutures being composed of soft silk, soaked in peroxide of hydrogen, a superficial row of sutures were inserted in the skin, the wound was again cleansed with the antiseptic and then painted over with collodion. The foal was removed from the dam and fed from a pail, and no further dressings ordered except the application of compound tincture of benzoin to the edges of the wound after a few days. A few of the sutures gave way, but healing progressed satisfactorily and perfect union resulted.

(6) *Surgical Dressings.*—As a general rule, wounds should be covered with suitable surgical dressings whenever possible, at any rate in the earlier stages Whether these dressings should be moist or dry must depend on circumstances. In suppurating wounds I find the best dressing, in cases where expense is no object, is double cyanide gauze soaked in solution of peroxide of hydrogen (1 part of the 10 volume solution to 3 of water), the gauze is then enveloped with a thick layer of cotton wool and a bandage.

As to the frequency of dressing, this will depend on the amount of discharge; when the latter soaks through the dressing it is an indication for renewal. If this be neglected the discharged become putrid and a mixed infection is likely to occur. For country practice a reliable and cheap antiseptic is Huxley's Liquor Cresolis, in 2 per cent. solution. As the discharge lessens the dressing need not be changed sooner than the third day, and later on a dry antiseptic dressing may take the place of the moist one—such as boric acid with zinc oxide.

In punctured wounds, after drainage has been provided for, I find it is a good plan to plug the wound with gauze soaked in peroxide of hydrogen; this is renewed as often as circumstances require.

In country practice it is useless to expect the owner or attendant to apply dressings properly, hence unless there are reasons to the contrary, wounds do best when left open, and simply cleansed with an antiseptic solution and painted with compound tincture of benzoin. This latter agent fell into disuse for some time, but in my experience it is a most useful wound dressing for country cases, where as little handling as possible of the wound is an important matter. Carbolic oil, which at one time was so popular a dressing, is now known to be *absolutely inert as a germicide.*

In hunters, deep punctured wounds of the front of the hind fetlock, due to sharp stones, are of very frequent occurrence. The bursa of the tendon may or may not be opened, but acute inflammation rapidly develops and marked pain is present. Attempts to heal such wounds quickly do not prove successful, as infection is deeply situated. In my experience the best dressing is one of the modern substitutes for poultices, which are composed of Kaolin, Glycerine, and antiseptic agents, applied hot and changed daily. When acute symptoms have subsided the ordinary dressings may be applied.

Wounds of the sheaths of the flexor tendons are often serious, in consequence of the infection extending upwards and downwards. Free drainage should be provided early, and rigid attention to antisepsis is necessary.

In all wounds in the region of the limbs there is a tendency to the formation of exuberant granulations, and these require early attention in order to avoid permanent blemishes resulting. I find that the judicious application of finely powdered sulphate of copper is the most reliable treatment in these cases—old-fashioned no doubt, but efficient for the purpose required. Wounds of the knee involving the extensor tendons in the vicinity of this joint are not uncommonly followed by Fibrous Anchylosis, accelerated no doubt by keeping the horse from lying down. When such a complication occurs the animal should be cast and chloroformed and the joint forcibly flexed, otherwise the horse will be useless.

Wounds in the feet due to picked-up nails I shall not consider—they would form a separate subject for a paper. But in hunters, wounds are not uncommon in this region as the result of portions of furze (gorse) branches entering the foot in the vicinity of the frog. Sharp portions of flint not uncommonly enter and extend deeply into the sole. The detection of such foreign bodies is not always an easy matter, and requires a careful examination of the foot. I believe the best treatment, after the removal of the foreign body and the proper enlargement of the wound, is to apply pure carbolic acid or Lysol, and a cataplasm composed of Kaolin and Glycerine.

In my experience, the most dangerous class of wounds are those due to punctures from shafts, such as result from collisions. The difficulty in obtaining drainage is very considerable, especially when the wound occurs in the region of the hind quarter. But proper drainage must be secured at all costs, otherwise treatment will fail and septicæmia will result. If necessary the animal should be cast in order to carry out the surgical procedure; after treatment will consist in copious irrigation with antiseptic solutions carried out by means of a Winton's syringe provided with a gum-elastic top. Where expense is not objected to, the wound should be plugged with double cyanide gauze soaked in hydrogen peroxide solution, the irrigation and dressing being carried out daily.

Time will not permit me to deal with the question of open joints—it would require a special paper. But I cannot omit drawing attention to the dangerous character of punctured wounds in the fore-arm, which are not uncommonly followed by purulent arthritis of the elbow joint. The septic inflammation extends along the sheaths of the tendons, and, as you are aware, these tendons support directly the synovial membrane of the elbow joint. Hence wounds of this region should be drained as early as possible by a free dependent opening.

There are many other practical points deserving of notice in connection with the treatment of wounds, but the paper has already exceeded the extent I had intended,

and I fear also that it has over-taxed your patience. The practical outcome of a consideration of the subject appears to be that although we can never hope to practise aseptic surgery in the strict sense of the term, we can at least carry out antiseptic principles as far as is possible under the very unfavourable conditions that surround us.

Improvements in the results obtained are more likely to follow strict attention to surgical cleanliness and proper drainage of wounds than to care in the selection of agents we employ as dressings. Far too frequently there is a tendency to attribute successful results to the use of the special antiseptic employed. But after twenty-five years of "playing the game," and seeing it played by others, I cannot believe that amongst the host of agents that are introduced yearly, one possesses any special virtues over another so far as the healing of wounds is concerned.

In conclusion, I think the practical deduction to be drawn is—that every attempt should be made to exclude infection from wounds whenever this is possible, and, in the case of wounds already infected, to retard the growth and development of micro-organisms, by the judicious employment of antiseptics. Whether in the case of operation or of accidental wounds, it is quite apparent that in ordinary practice, we cannot afford to dispense with antiseptics, and attempts to do so are likely to be followed by disaster.

An interesting discussion ensued, and the meeting terminated with a hearty vote of thanks to the essayist.

L. W. WYNN LLOYD, Hon. Sec.

Where Diseased Meat Comes From.

While the butcher is saddled with all the moral and financial responsibility of unsound or diseased meat, he is not really the producer of it; consequently someone else ought to share the odium with him. Who is that other person? Let the *Farmer and Stockbreeder* tell us. On 26th February last, in its "Replies to Veterinary Queries," we find the following:—

> COUGHING HEIFER (S.W.M.)—I should fear it is caused by tubercles in the lungs or on the sides of the chest. Hadn't you better fat her off?

Nothing could be plainer than this. Mr. Field, M.P., having had his attention drawn to this reply, immediately wrote to the Local Government Board and the Board of Agriculture, pointing out that the purchase of tuberculous animals rendered butchers liable to fine and imprisonment. He also asked what these Departments, jointly and severally, had done to prevent the marketing and sale of diseased animals, and, further, what steps, "if any," had been taken to make it known to farmers and members of the veterinary profession that to fatten off tuberculous beasts "was fraudulently criminal." Up to present writing, beyond the usual bald official acknowledgment, Mr. Field has got no answer. Having regard to the attention given to meat inspection at the present moment, it will be interesting to learn the official view as to the production of diseased meat, and the responsibility of the breeders and feeders of same to the public and to the trader.—*The Meat Trades' Journal.*

DISEASES OF ANIMALS ACTS 1894 TO 1911, SUMMARY OF RETURNS.

Period.	Anthrax.		Foot-and-Mouth Disease.		Glanders.		Parasitic Mange.	Sheep Scab.	Swine Fever.	
	Out-breaks	Animals.	Out-breaks	Animals.	Out-breaks	Animals.			Out-breaks	Slaughtered. *
IRELAND. Week ended Mar. 30	...	...	...	...	...	...	...	7	8	87
Corresponding Week in 1911 ...	...	...	...	...	...	...	4	5	3	9
Corresponding Week in 1910 ...	...	...	...	...	...	...	1	11	...	...
Corresponding Week in 1909 ...	1	1	...	...	...	...	2	30	...	...
Total for 13 weeks, 1912 ...	1	1	...	...	...	...	27	208	52	413
Corresponding period in 1911 ...	3	3	...	...	1	1	33	202	35	666
Corresponding period in 1910 ...	4	6	...	...	...	...	23	254	11	297
Corresponding period in 1909 ...	2	2	...	...	...	...	30	227	8	71

Department of Agriculture and Technical Instruction for Ireland, (Veterinary Branch), Dublin, April 1, 1912

NOTE.—The figures for the Current Year are approximate only. * As Diseased or Exposed to Infection

PLANT POISONS.

By JOSEPH BURTT-DAVY, F.L.S., F.R.G.S.
Government Botanist (Transvaal).

The losses among stock in South Africa due to poisonous plants have not received that attention which the subject deserves, owing to the fact that hitherto efforts have been largely concentrated upon tick-borne and other diseases due to parasites. Now that these parasitic diseases are in a measure under control, stock farmers are turning their attention to other sources of loss among their flocks and herds such as lack of winter feed and direct loss from eating poisonous plants. The recent ravages of "gal-lamziekte" in Bechuanaland and the adjacent districts of the Transvaal and Orange Free State, a disease which appears to be caused by some obscure poisonous plant, have brought the subject prominently before the public.

Many farmers have expressed the opinion that gallamziekte is caused by some poisonous plant. Others have thought this improbable, or even impossible, because of certain peculiarities connected with the incidence of the disease. A study of plant poisoning in different parts of the world explains some of these peculiarities, which are quite compatible with the known characteristics of poisoning by certain plants, as can be seen from the following notes:—

Season of the Year.—With some poisonous plants trouble is experienced mainly at certain seasons of the year; this is particularly the case with the tulps (species of *Homeria* and *Moraea*) and slangkop (*Urginea Burkei*)

and usually also with Chailletia or Gift-blaar (*Dichapetalum cymosum*). In these cases the reason may be traced to the fact that the plants in question make their new growth of foliage before the rains begin and therefore at a time when green feed is scarce and stock are suffering from a prolonged diet of dry food. They pick up the poisonous foliage in their eagerness for something green, either in ignorance of its poisonous character or accidentally among the short grass just springing. Such plants are usually avoided by animals accustomed to them. But with other poisonous plants the case is sometimes quite different.

In veterinary practice it is commonly recognized that a plant may be harmful at one time and not at another. It is well known that vegetable drugs differ in potency at different seasons of the year, the difference being, perhaps, correlated with the stage of growth of the plant. Some are only officinal if gathered at a particular season or stage of development. That a similar difference may apply to the toxicity of some plants is shown by Melter (1899), who records that his horse ate 500 lb. of dried hay of *Passiflora incarnata* without any injurious effect; it had been gathered in July when the plant had passed the flowering stage. In the following March, eight months later, the horse ate only 25 lb. of the dried plant, which had been gathered for medicinal purposes when in flower (the condition in which it is most potent); this time the result was fatal.

The Condition and Age of a Plant may affect its Toxic Properties.—The poisonous principle of some plants (e.g. *Conium maculatum*) is volatile, and the dried material may be less dangerous than the fresh. Hay made from the sleepy grass of New Mexico (*Stipa Vaseyi*) does not appear to possess any poisonous qualities, although in the fresh state the plant has a narcotic effect on horses (Scribner, 1898). The young plants of *Lotus arabicus* of northern Africa are highly poisonous to horses, sheep, and goats, according to Dunstan and Henry, but the old, mature plants are freely used as a fodder by the natives. Feeding experiments with *Crotalaria burkeana* produced no effect when the plants were partially dried. This factor renders the investigation of the poisonous principle of some plants more difficult, as they lose a large part of the poison on being gathered or prepared for research.

Some parts of certain plants are more poisonous than others. The fruits of the Hemlock (*Conium maculatum*) and the seeds of Stramonium (*Datura stramonium*), of species of Lathyrus, and of other plants, contain a larger proportion of poison than the foliage.

The relative proportion of poison contained probably differs in individuals of the same species, just as there is a difference in the flavour or sweetness of two fruits from the same tree, in the amount of latex yielded by different rubber-producing trees of the same species, and in the amount and quality of opium produced by the Opium-poppy under varying conditions of soil and climate.

Some kinds of poisonous plants are much more dangerous than others, perhaps because more often eaten, or because the poisonous substance contained is more virulent, or because one kind contains a larger proportion than another. Therefore some species act on the system with great rapidity, while the action of others is relatively slow.

Small doses of some poisons may be taken with beneficial effect, when large doses may be fatal. Some of the most deadly poisons (e.g. Belladonna, Strychnine, Aconite) are valuable drugs when taken in official doses. It is evident, therefore, that a plant is not necessarily harmless because stock are occasionally seen to eat of it without injurious effect.

The toxic properties of plants are not of course due in all cases to the same chemical substance. It is well known that several toxic compounds are present in various plants, which differ in their effect on the animal system, e.g. the Alkaloids, nicotine, morphine, atropine, hyoscyamine, strychnine, and veratine; the Glucosides, lotusine, coronilline, and amygdaline; the Gluco-alkaloid solanine; and the Acids aconitic and hydrocyanic.

Sometimes the same poison is present in more than one species or genus of plants, e.g. hyoscyamine, which is characteristic of the Henbane (*Hyoscyamus niger*) and atropine, characteristic of the Deadly nightshade (*Atropa Belladonna*), these are both present in the Stramonium (*Datura Stramonium*); solanine occurs alike in the Black nightshade (*Solanum nigrum*), the Jerusalem cherry (*Solanum pseudocapsicum*), the tomato (*Lycopersicum esculentum*), and in the white sprouts and unripe tubers of the potato (*Solanum tuberosum*) when grown near the light.

Similar toxic properties sometimes occur in many plants of the same family.—The presence of poisonous alkaloids, narcotics, acids or acid compounds is often common to and characteristic of many species of a genus and even of a family; thus Hyoscyamus, Atropa, Datura, and Lycopersicum, referred to above, all belong to one plant-family, the Solanaceae. On this account we are able to treat some plant families as more dangerous than others; thus the Ranunculaceae are often acrid and poisonous; the Papaveraceae, the tribe Cichoriaceae of the Compositae, and the Solanaceae are apt to be narcotic; the family Loganiaceae produces some of the most dangerous vegetable drugs known to us. On the other hand, some large families of plants contain no species known to be poisonous, e.g. the Cruciferae, etc.

Not all kinds of animals equally affected.—Some kinds of animals are poisoned by plants which are harmless to other kinds, e.g. Darnel seed is said to be poisonous to man, dogs, horses, and sheep, but to be wholly innocuous to cows, pigs, and ducks (*Wood, Remington*, and *Sadtler*). The well-known Poison ivy, *Rhus toxicodendron*, of the Atlantic coast of North America, and the Poison-oak, *Rhus diversiloba*, of the Pacific coast, are very poisonous to man, but are greedily eaten in quantity by horses with no ill-effect. Morris (1896) states that *Leucaena glauca* is greedily eaten by cattle, sheep, and goats without ill effect, though very injurious to horses, mules, donkeys, and pigs. Dr. Watkins Pitchford suggests that probably all plants which are poisonous to animals are also poisonous to man.

Not all individuals equally susceptible—Nor are all individuals of the same animal species equally susceptible to certain poisons. In California some people are immune against poisoning by *Rhus diversiloba*; most persons are only slightly inconvenienced, some are made seriously ill, and a few have been killed by it. Chesnut (1898) reports that *Rhus toxicodendron*, of the eastern United States, acts in the same way, and he further states that this variability is not confined to poisons acting externally.

Susceptibility may be increased by ill-health or poverty of condition.—The condition, age, or state of health of the animal sometimes has an influence on its susceptibility to certain poisons, or to the quantity which may be consumed without serious effect. Wilcox (1901) reports that sapotoxin, a poisonous substance found in many plants, is far more injurious when the alimentary tract is ulcerated than when it is healthy.

Acquired craving.—In the case of some poisonous plants animals which taste them develop a morbid craving which, when once acquired, can scarcely be overcome. This is true of *Astragalus Hornii* and other "Loco-weeds" of the Western United States. Maiden (1901) reports a similar result from eating the Australian "Indigo Plant" *Swainsona galegifolia*. Chesnut (1898) finds that in the Southern United States stock usually avoid *Helenium autumnale*, but sometimes develop a taste for the plant and are killed quickly by eating it in

large quantity. The seeds of the common Boer pumpkin of South Africa, if eaten freely by poultry or ostriches, are said to make the birds "crazy" and to produce temporary paralysis; it is also said that "once they acquire the bad habit of eating the pips it is difficult to break them of it." This craving may be developed to such an extent that animals ignore their proper food and, instead of grazing quietly, spend their time hunting over the camps in search of individuals of the particular plant they have learned to like, even digging up the roots to satisfy their craving, with the result that they become emaciated from lack of sufficient food. This taste is an acquired one, and does not necessarily affect all the animals in a herd or flock. Certain animals on one side of the fence may acquire it, while those on the other side may not. It is well known that animals have their particular friendships and that some of them generally graze together, especially if they belong to the same family. If one member of such a grazing group acquires the taste for a certain poisonous plant it is likely that the other members will learn to eat it also.

These facts might explain the "spread" of a disease caused by poisoning, to farms which were hitherto supposed to be clean. Farmers who have a herd affected with a disease which is not contagious sometimes move to supposed clean farms, either hiring the grazing or selling the herds outright. If some of these animals have acquired the taste for the particular plant they will hunt for it, and if they find it in sufficient quantity will eat of it and become affected; in this way the disease may "spread."

This abnormal craving may be acquired through scarcity of feed in winter or early spring, which causes the animals to eat anything green. If they are moved to a farm where the feed has not been eaten down closely they are likely to find enough of their normal food to make it unnecessary to resort to the dangerous species, and so the losses may be checked for a certain time, only to recommence, however, when the veld is eaten down. In such cases an obvious method of treatment is the provision of an adequate supply of palatable winter feed such as Teff hay. This would act as a preventine, but not as a remedy for cases where the poison has already been taken into the system.

A distaste may also be acquired.—It is commonly stated by men who are much with stock in South Africa that animals learn to know and to avoid poisonous plants. Certain it is that stock brought up on a farm where Tulp abounds will feed among it constantly and with impunity, often without the loss of a single head, while strange animals, from places where it does not grow, will eat of it and die if not carefully watched and treated. Experiments carried out by our Veterinary Division tend to confirm this view; G. V. S. Dunphy (1906) notes that sheep and goats which had once been poisoned with *Dichapetalum* and had recovered from the effects seemed to show a great dislike for the leaves. In a test with Yellow Tulp (*Homeria pallida*) Doctor Theiler was unable to induce a hungry ox which had been starved for thirty-six hours to eat Tulp even when chopped and well mixed with hay.

Small amounts of poison may sometimes be taken with impunity. It does not necessarily follow that a plant is harmless because stock are occasionally seen to eat of it without injurious effect, for large doses may be fatal. Some deadly poisons (e.g. Strychnine, Belladonna, and Aconite) are valuable drugs when taken in official doses.

Many stock farmers of the Transvaal are firmly convinced that the converse is also true, and are prone to give decoctions of Tulp or Gift-blaar to render their cattle and horses immune.

Classification.—Vegetable poisons may be grouped as follows, if we adopt Kobert's classification of poisonous substances:—

1. Irritants which cause gross anatomical changes of the organs, e.g. croton oil and savin.
2. Blood poisons—
   - (*a*) which interfere with the circulation in a purely physical manner, e.g. ricin and abrin;
   - (*b*) which dissolve the red corpuscles, e.g. the saponins;
   - (*c*) which, with or without primary solution of the red blood corpuscles, produce in the blood methaemoglobin, e.g. picric acid;
   - (*d*) which have a peculiar action on the colouring matter of the blood or on its decomposition products, e.g. hydric cyanid.
3. Poisons which kill without the production of gross anatomical change—
   - (*a*) which affect the cerebro-spinal system, e.g. strychnine, morphine, coniin, curarine, atropine, strophine, aconitine, etc.;
   - (*b*) which affect the heart, e.g. digitalin, helleborin, muscarine.

Parasitic Mange—Farmer Fined.

At Eddisbury Petty Sessions on Monday, before Captain Wynne Griffith and other magistrates, Thomas Henry Barnard, of the Rectory Farm, Delamere (Northwich, Cheshire), was summoned under the Diseases of Animals Act, 1894, for failing to notify a case of parasitic mange on his premises, as required by the Parasitic Mange Order, 1911, Mr. J. Holland, solicitor, Brinsford, defended.

Constable Barber stated that on February 25th he was on duty in Chester Road, Delamere, when he noticed an aged brown mare in the defendant's orchard. He could see that patches of hair were missing from the neck and back, and the animal appeared to be uneasy. He interviewed the defendant, who admitted that the animal belonged to him. Asked how long the horse had been in that condition, he said a fortnight. He also stated that the mare was lousey, and had a little itch, and the hair had come off with her rubbing against the trees. Witness accompanied him to the orchard, and, on examining the mare, he found the mare in a shocking condition. It was a mass of scab, and he noticed several patches on the back and neck which were bleeding. There was scarcely any hair on the back and neck. He told the defendant that in his opinion the mare was suffering from parasitic mange, and he replied, "I see by the papers that they have got it very bad around Manchester, but she has not got it. It is lice and old age that is the matter with her." He told the defendant that he had seen many cases of parasitic mange, and he was strongly of opinion that that was a very bad case. However, witness told him to keep the animal isolated, and he would report it to his sergeant. On March 1st witness again visited the premises in company with Sergeant Turner. The latter asked defendant why he had not destroyed the mare as promised, and he replied that he did not intend to, because Mr. Bibbey, veterinary surgeon, of Winsford, had told him that the animal had not got the mange, but that it was affected with lice and old age. Acting under Mr. Bibbey's instructions he gave the mare a dressing of Australian sheep dip. On examination he found the animal had had a very severe dressing, and on the point of the near shoulder he saw five or six marks where the hair had been cut, apparently by scissors. In his opinion that was the part of the animal which was least affected by the mange. Defendant was asked who had cut the hair, and he replied that Mr. Bibbey had done it for the purpose of making an examination.

Mr. Holland: Do you think it is easy to detect mange?—I have seen several cases.

Sergeant Turner stated that on February 25th he called on Mr. Price, the local veterinary inspector, and accompanied him on the following day to the Rectory Farm. Mr. Price examined the mare, which was in a shocking condition, but he did not put his hand on the animal, because defendant said, "Don't you touch her, keep away or she will kick you." He asked the defendant if the mare had been off the premises and defendant replied that she had been to the Northwich Market on the previous Friday. He then told defendant that it was the worst case of mange he had seen. He corroborated the evidence of Constable Barber as to the visits to the farm on March 1st and 2nd, and added that on the 16th he went there again with the chief veterinary inspector, Mr. Laithwood.

Robert Price, veterinary surgeon, Tarvin, stated that he had been in practice 32 years, and for 27 years had been inspector under the county. On Monday, Feb. 26th, he examined the mare in question, and found she was badly affected with mange on the head, withers and back; it was a pronounced case. On March 2nd he took some of the scab for the purpose of microscopic examination, and found dead parasites.

Cross-examined: He condemned the mare before he found the parasites; he had quite sufficient evidence without. The disease was a very contagious one, and it was possible for an animal to have mange and lice together.

Jas. Laithwood, chief veterinary inspector for the county, stated that he examined the defendant's brown mare on March 6th, and he found it to have all the symptoms of mange. Accordingly he took scurf from various parts of the animal's body, and under the microscope he discovered no live parasites, but shrivelled-up dead ones; also what he concluded were eggs. He put a quantity in an incubator to hatch out, and on the fourth day he discovered young lice as well as mange parasites had been hatched out.

The magistrates with the aid of a microscope inspected the hatched-out lice and parasites.

In cross-examination, Mr. Laithwood said he would have been surprised to find any parasites where the hair was cut off by Mr. Bibbey. He admitted that if the animal was attacked with lice she might rub herself raw. It was safer not to come to a conclusion about parasitic mange before making a microscopic examination.

Defence.

For the defence, Mr. Holland urged that the mange order was of recent date, and therefore the defendant might be excused if he was not fully cognisant with it. One could also understand the police being a bit keen on it. In the Act it was stated "where the owner or person charged with an offence against the Act, he shall be presumed to have known of the existence of the disease." The contention was that the animal was affected with lice, owing to the fact that the defendant could not curry-comb her, with the result that she became dirty. He would point out that Mr. Bibbey was the only veterinary surgeon who saw the mare before the dressing was carried out.

Thomas Henry Barnard gave evidence to the effect that the mare was 30 years of age. When the constable came he told him the animal was affected with lice, but the officer said it was the mange, and ordered him to isolate her. If he had suspected mange he would certainly not have put her with the grey mare. The latter was perfectly clean. It was in consequence of Mr. Bibbey's advice that he did not have the animal destroyed.

Herbert Bibbey, veterinary surgeon, Winsford, stated that he examined the mare with his fingers first, and found an even surface, but she was swarming with lice. In his opinion the presence of the lice had caused the mare to get in the condition in which she was. Sometimes lice and mange parasites were found together, but not as a rule. He examined the grey mare and found no trace of disease or lice. He took scrapings from various parts of the brown mare, and subjected them to microscopical examination, but found nothing except the eggs of lice. In his opinion if the mare had been suffering from mange, and had been worked with another animal for two or three weeks that other animal would have become affected. The absence of mange in the grey mare confirmed his opinion that the brown mare was not affected. Five days after she had been dressed the mare improved, new hair appeared on the bare patches, and the irritation had subsided. A week later the condition of the mare was still further improved.—In reply to the Magistrates' Clerk, witness said he could not speak as to the eggs, because he did not incubate them.

Albert H. Darwell, veterinary surgeon, Northwich, stated that he had had 30 years' experience as inspector under the Diseases of Animals Act. He spoke to examining the defendant's brown mare on March 2, and she was suffering from a skin disease of a non-contagious character. He admitted that the mange was highly contagious. The grey mare had two or three lice upon her, but there was no sign of any skin disease.

The magistrates retired to consider their verdict, and after an absence of upwards of half-an-hour, the Chairman said the magistrates considered the mare was suffering from parasitic mange. They also were of the opinion that the defendant thought the animal was infected with lice; at the same time the Bench were of the opinion that the defendant showed gross negligence in not treating the mare himself or seeking advice. Under these circumstances he would be fined 20s. including costs.—*The Chronicle.*

Parasitic Mange, or Surfeit?

At Steyning, on Monday, April 1, Charles Huggett of Laybrook Farm, Thakeham, was charged with not having notified the police of two cases of parasitic mange from which it was alleged two of his horses were suffering, as required by the Parasitic Mange Act of 1911, According to the prosecution, when a police constable saw the horses on March 21 he was told by the defendant that they had had the complaint for about a fortnight and that he had done the best he could for it. "Try not to make it any harder than you can help for me," he was alleged to have said to the constable, but before the Bench he denied making use of any such remark. Questioned by Huggett, the constable admitted that he did not remember him using the word "parasitic," but he was quite sure he said he had been treating them for mange.

When Supt. W. Fowler called at the farm, he found a preparation in the stable for treating horses with mange, and the stable itself had been partly disinfected.

Mr. J. Bolton, a Steyning veterinary surgeon, who was with him, had no doubt that the horses—which it was said were in a very bad condition, very poor, and very old—were suffering from parasitic mange. He showed some parasitic hair under a microscope, which led Mr. Powell Breach, one of the Magistrates, to ask whether it was possible to know that a horse had parasitic mange without making a microscopic examination. "In this case the animals were bad enough for anyone to see they had the mange," replied the witness.

While admitting that he was unaware parasitic mange had to be notified, defendant said he believed the horses were suffering from surfeit—a very common disorder at this time of the year.

Mr. J. Castledine, a Partridge Green veterinary surgeon, who had been called in, told the Bench he formed the opinion it was a very severe case of surfeit. He

admitted, however, that the microscope revealed a parasite.

The Bench, while remarking that the police could not do otherwise than bring the case forward, thought perhaps the public did not know the Act so well as they did, and so they wished to deal as lightly as possible with the defendant. No conviction would be registered, but he would have to pay 10s. costs.—*West Sussex Gazette.*

The Van Horse Parade.

The ninth annual Parade of the London Van Horse Parade Society took place in Regent's Park on Easter Monday, in weather which, though cold and windy, was almost uninterruptedly fine. Judging began at 10 a.m. and went on till nearly lunch time; after lunch the long "march past," with the customary attendant presentation of prizes, took place.

There was a good concourse of spectators; and, for the first time in its history, the Parade was honoured by the presence of the Lord Mayor of London, who presided at the Parade Luncheon and remained to witness the march past afterwards. He was accompanied by the Lady Mayoress, who distributed the prizes.

The presence of the Mayor and Mayoress was an indication of the growing recognition of the Parade; the number and quality of the animals shown testified to the constant increase of its popularity amongst owners and carmen. The entry was a record one for the Society; 613 drivers of singles or pairs entered and 746 horses were exhibited. The first Parade in 1904 had only 132 entries; and, it may be added, every successive year since then has shown an increase of entry over the preceding one.

It was generally agreed also that the present Parade showed a marked improvement in the standard of the horses. A few were of lighter class than the typical vanner, but the general quality and condition was very high indeed. So evidently thought the judges, for a very large proportion of the competitors obtained first-class awards. One striking feature was the special prizes, 66 in number, given to drivers for the length of their unbroken service with one firm. Two veteran drivers each exceeded 50 years' unbroken service; seven others had records of between 40 and 50 years; sixteen of between 30 and 40, and forty of between 20 and 30.

The four pairs of judges were Sir Gilbert Greenall, with Col. the Hon. Charles Byng, Sir Henry Hoare, Bt., with the Hon. A. E. Parker, Mr. Richard Budgett with Mr. R. N. Stollery, and Mr. A. C. Church with Mr. H. Horton. The four veterinary inspectors were Messrs. J. W. Edwards, F. W. Stanley, H. Lomas, and E. Alfred West. These officers, with the support of a strong Committee and a dozen energetic stewards, succeeded in making the Society's ninth Parade the most attractive one in its history.

Army Horses.

A memorandum of the Secretary of State for War relating to the Army Estimates for 1912-13, which was issued on the 27th February as a Parliamentary Paper [Cd. 6064] contains the following:—

"Recent cavalry manœuvres have brought prominently to notice the large proportion of the horses in the ranks of the cavalry regiments at home which would not be fit, on the outbreak of war, for the very hard work which would at once be demanded of them. A thorough investigation was made during 1911 into the system of horsing the cavalry, as regards peace establishments, mode of supply of remounts and methods of training. As a result it has been found necessary to make a further increase in the number of horses maintained in the regiments in peace, and it is in contemplation to introduce a system of collecting remounts and sending each regiment its annual supply in one batch, to be then subjected to a course of systematic and progressive training, instead of sending horses in small numbers throughout the year. Under the new system, when fully established, no horse will be subjected to the strain of manœuvres or put into the ranks on mobilization for war until he has been thoroughly hardened in this way and has reached the age of six years. It is confidently expected that the cost of the new scheme will be to a large extent covered by the saving made on wastage, and the longer average service obtained from the horses.

In pursuance of this scheme 20 horses are added to the peace establishment of each line regiment at home.

I mentioned in my memorandum on the Estimates of the current year that County Associations had encountred various difficulties in the task of organising the supply of horses to the Regular and Territorial Forces on and after mobilisation. After full investigation, I found the best solution to lie in transferring the responsibility for completing the work to General Officers Commanding-in-Chief, providing them with a small staff of remount officers for the purpose, and placing at their disposal the services of adjutants of the Territorial Force, to inspect and classify a sufficient proportion of horses in each county to provide the required quotas after allowing for casualties and rejections.

This month was the time assigned for the completion of the first classified lists and hereafter the lists will be continuously revised so as to keep touch with the changes in the horse population of the country.

The expansion of mechanical transport in the Army will reduce the number of horses required for the Expeditionary Force to a considerable extent, but unfortunately the corresponding expansion in the civilian world threatens to lead to the disappearance of the 'bus horse, on which we have hitherto mainly relied for artillery purposes."

Vivisection and the Veterinary Profession.

"No Choice of Doctor."

To the Editor of The Referee.

Sir,—Many, I feel sure, must have welcomed, as I did, the letter which appeared under the above heading in last Sunday's *Referee.*

I, for one, sincerely hope "Pate's" letter may bear fruit, and that we shall see the matter taken up, particularly by the societies which exist expressly for the purpose of protecting dumb animals. The members of these societies must surely be ignorant of the extent to which unnecessary suffering is inflicted upon animals by unqualified vets., or we should have heard of this matter long ago.

When a man consults a quack doctor and suffers in consequence, he has only himself to blame. Not so the horse! For him there is no "choice of doctor." His master chooses, while he, too often, suffers.—I enclose my card, and am, sir, yours, etc.

F.R.C.S.

Harley Street, W., March 27.

The Effect of Glycerine upon the Chromogenicity of Bacteria.

C. Gazetti states (*Zentralbl. f. Bacteriologie, U.S.W.*) that the addition of glycerine to culture media in which chromogenic bacteria are being grown generally exercises an unfavourable effect upon the chromogenicity of the organisms.—(*Berliner Tier. Woch.*)

DISEASES OF ANIMALS ACTS 1894 TO 1911, SUMMARY OF RETURNS.

Period.	Anthrax. Outbreaks Confirm'd	Anthrax. Outbreaks Reported	Anthrax. Animals Confirm'd	Anthrax. Animals Reported	Foot-and-Mouth Disease. Outbreaks	Foot-and-Mouth Disease. Animals.	Glanders * (including Farcy) Outbreaks	Glanders * (including Farcy) Animals.	Parasitic Mange. Outbreaks	Parasitic Mange. Animals.	Sheep Scab. Outbreaks	Swine Fever. Outbreaks.	Swine Fever. Slaughtered. *
GT. BRITAIN. Week ended April 6	17		31				7	12	65	103		69	576
Corresponding week in 1911	21		30				1	1			5	62	568
Corresponding week in 1910		29		40			10	16			10	26	257
Corresponding week in 1909		34		38			17	134			7	23	363
Total for 14 weeks, 1912	342		387				54	117	1581	3658	143	859	10384
Corresponding period in 1911	282		331		1	18	53	185			285	575	6299
Corresponding period in 1910		434		538			103	275			293	323	2467
Corresponding period in 1909		333		556			164	656			377	389	3572

* Counties affected, animals attacked: Kent 1; London 8, Warwick 3.

Board of Agriculture and Fisheries, April 9, 1912.

	Outbreaks									
IRELAND. Week ended April 6	...	...	...	...	...	...	...	5	11	137
Corresponding Week in 1911 ...	...	...	...	...	...	...	3	7	3	18
Corresponding Week in 1910 ...	...	...	...	...	...	...	2	7	2	8
Corresponding Week in 1909 ...	1	1	...	...	...	...	2	12	1	2
Total for 14 weeks, 1912 ...	1	1	...	...	...	...	27	213	68	550
Corresponding period in 1911 ...	3	3	...	...	1	1	36	209	38	684
Corresponding period in 1910 ...	4	6	...	...	...	...	25	261	13	305
Corresponding period in 1909 ...	2	2	...	...	...	...	32	239	9	73

Department of Agriculture and Technical Instruction for Ireland, (Veterinary Branch), Dublin, April 9, 1912

NOTE.—The figures for the Current Year are approximate only. * As Diseased or Exposed to Infection

The late Mr. Wyndham Bryer.

I much regret to see in your obituary list of the death of one of my old friends, Wyndham Bryer, late of Cheltenham, also that nothing is said about his many good qualities. Members of the profession who were in practice 20 or 30 years ago, will remember him as doing probably the largest practice in the examination of hunters as to soundness that has ever been done, or ever will be done, in this country, and at the same time making very few mistakes, his opinion being taken without question by the well-known horse-owners of that time. He was a man who had great force of character, and a determined but pleasant manner. He did not attend veterinary meetings to spout brotherly love and affection and the elevation of the profession, then go home and do a nasty trick to his professional neighbours, but I think I can safely say he never did a brother vet. any harm if he could possibly help it. In short a *man*, in the true sense of the word, has passed away. For some years he has been living at Boscombe, Bournemouth, having quite retired from the professsion.

JAMES BLAKEWAY.

Mr. JOHN M'DOUGALL, M.R.C.V.S., second son of the late Mr. John M'Dougall, M.R.C.V.S., Helenburgh, and one of the most competent of the younger generation of veterinary practitioners, died with startling suddenness at his residence, 56 Grant Street, Glasgow, on 1st inst. We make this announcement with deep regret. Mr. M'Dougall was a young man of conspicuous promise in his profession, and leaves a young wife and family to mourn his loss. To his bereaved wife and family we tender our deep sympathy.—*The Scottish Farmer.*

CORRESPONDENCE.

UNQUALIFIED ASSISTANTS.

Sir,

I beg to draw your attention to certain advertisements in *The Record* for or by unqualified assistants. This seems to me to be extremely unfair to the young qualified man, who has usually very little capital and is not allowed to work for an unqualified man, and if he does so is considered to be acting unprofessionally, and is liable to be struck off the Register.

Meanwhile the richer practitioner is allowed to employ unqualified men, and so lessen the market value of the qualified assistant. At the same time he is acting, or supposed to be acting, professionally, and is not liable to be struck off the Register. I should like to know if the Council consider this justice?

It seems to me to be a case of one law for the rich and another for the poor. The fact is, that the qualified assistants are two small and weak a body to demand justice at the hands of the profession.—Yours faithfully,

M.R.C.V.S.

[We agree with our correspondent that practitioners should not employ unqualified assistants. But they do, and our Council makes no attempt to prevent them. We may modestly assume to help in guiding the profession in the right way, but we cannot be expected to usurp the powers of the Council.—ED]

Original articles and reports should be written on one side of the paper only and authenticated by the names and addresses of the writers, not necessarily for publication.